

THE VIRTUAL ASSEMBLY DESIGN ENVIRONMENT
(VADE)
Inventors: S. Jayaram et al.
Docket No.: WSUR117441
EXPRESS MAIL NO.: EL742878527US

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RECORDED - 05/24/04

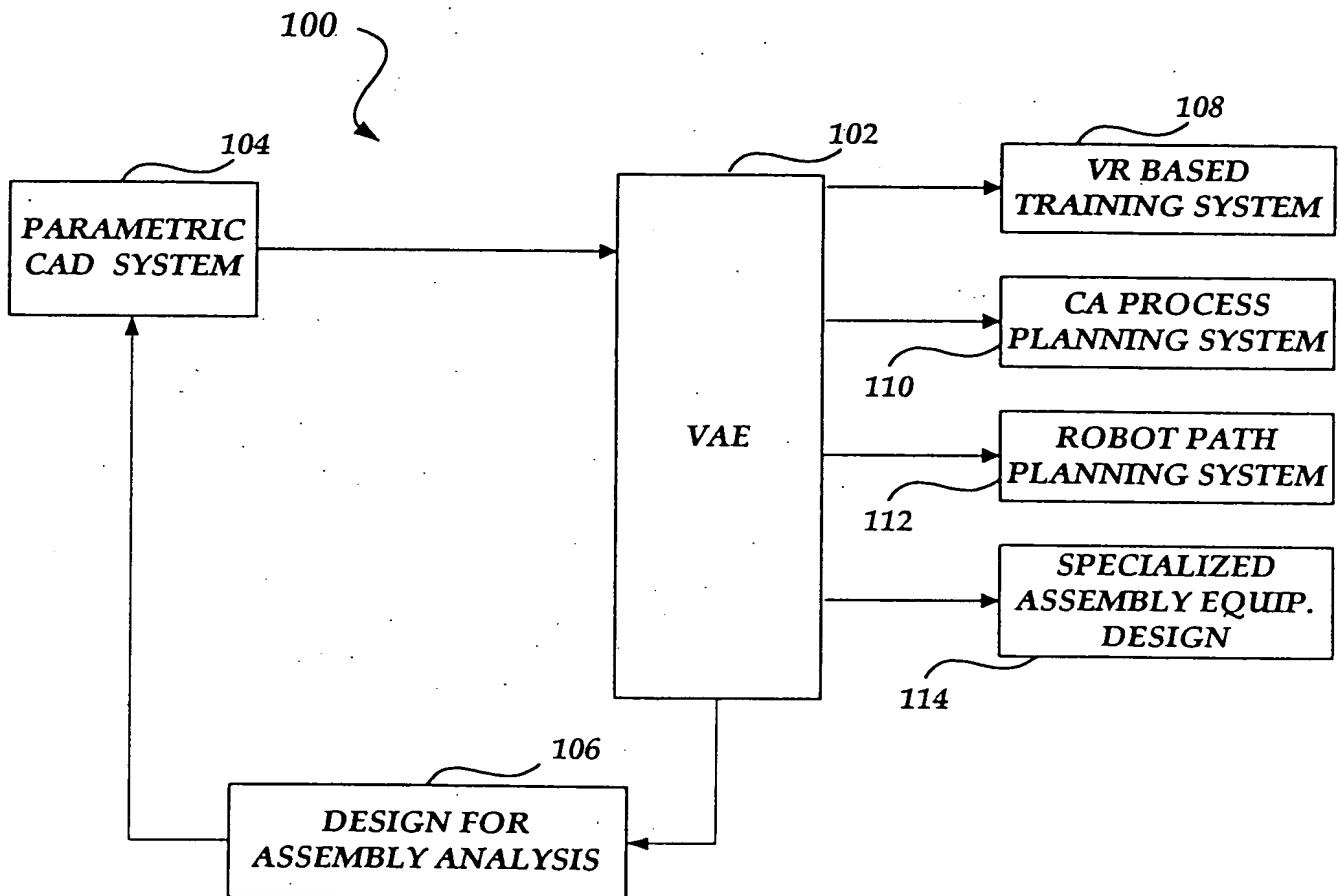


FIG. 1

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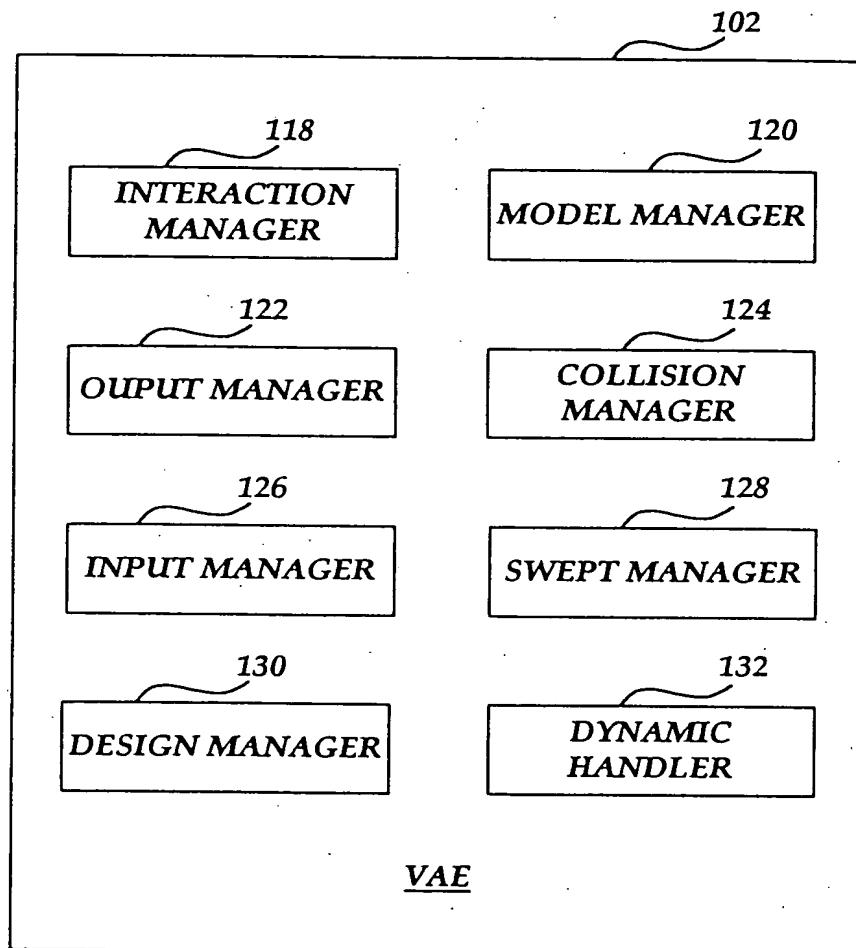


FIG. 2

Title: VIRTUAL ASSEMBLY DESIGN ENVIRONMENT
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150

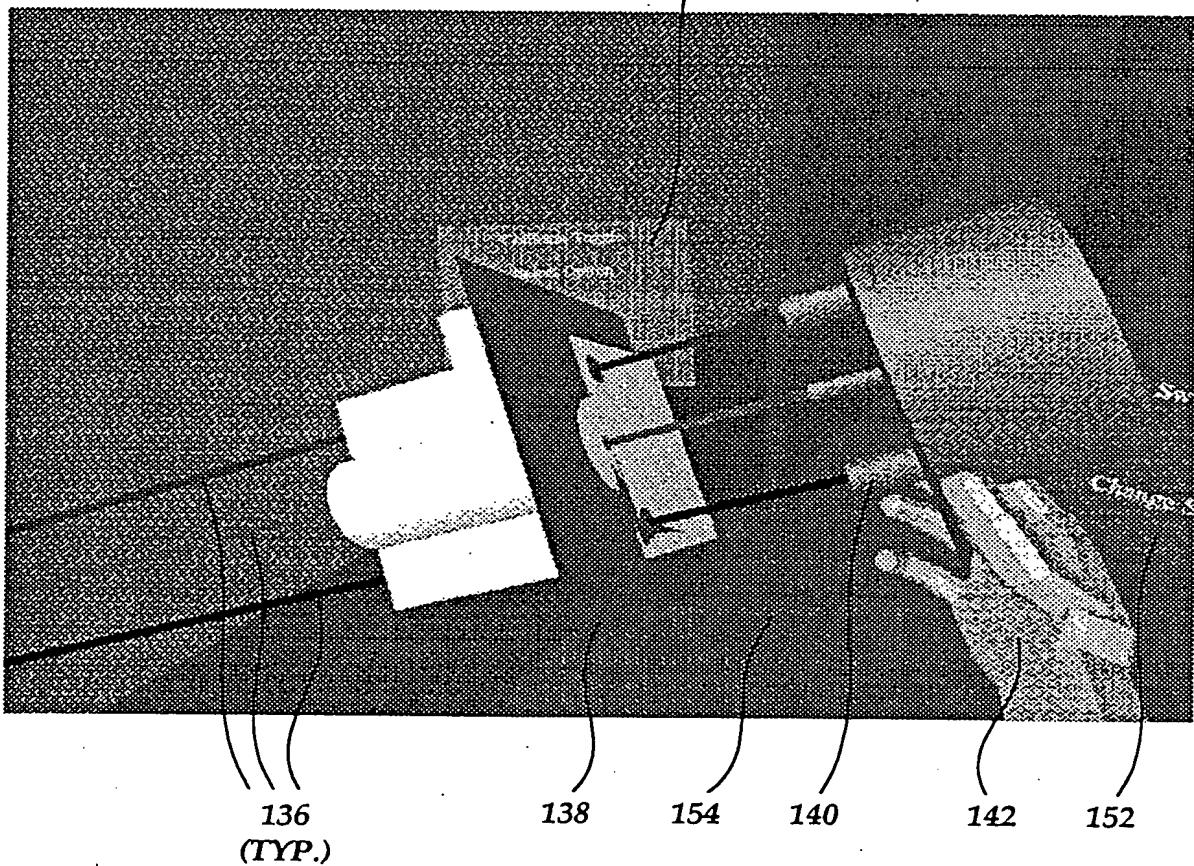


FIG. 3

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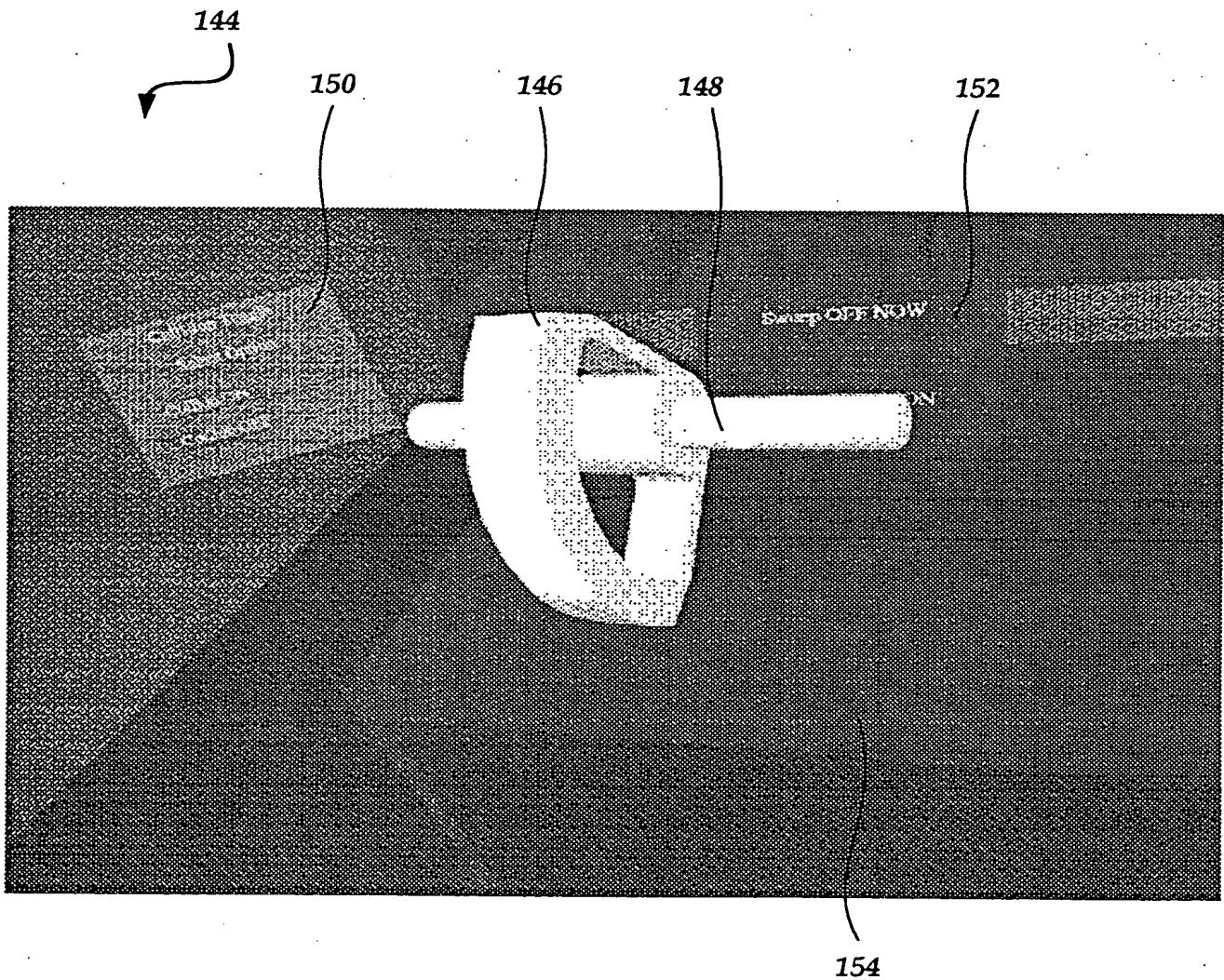


FIG. 4

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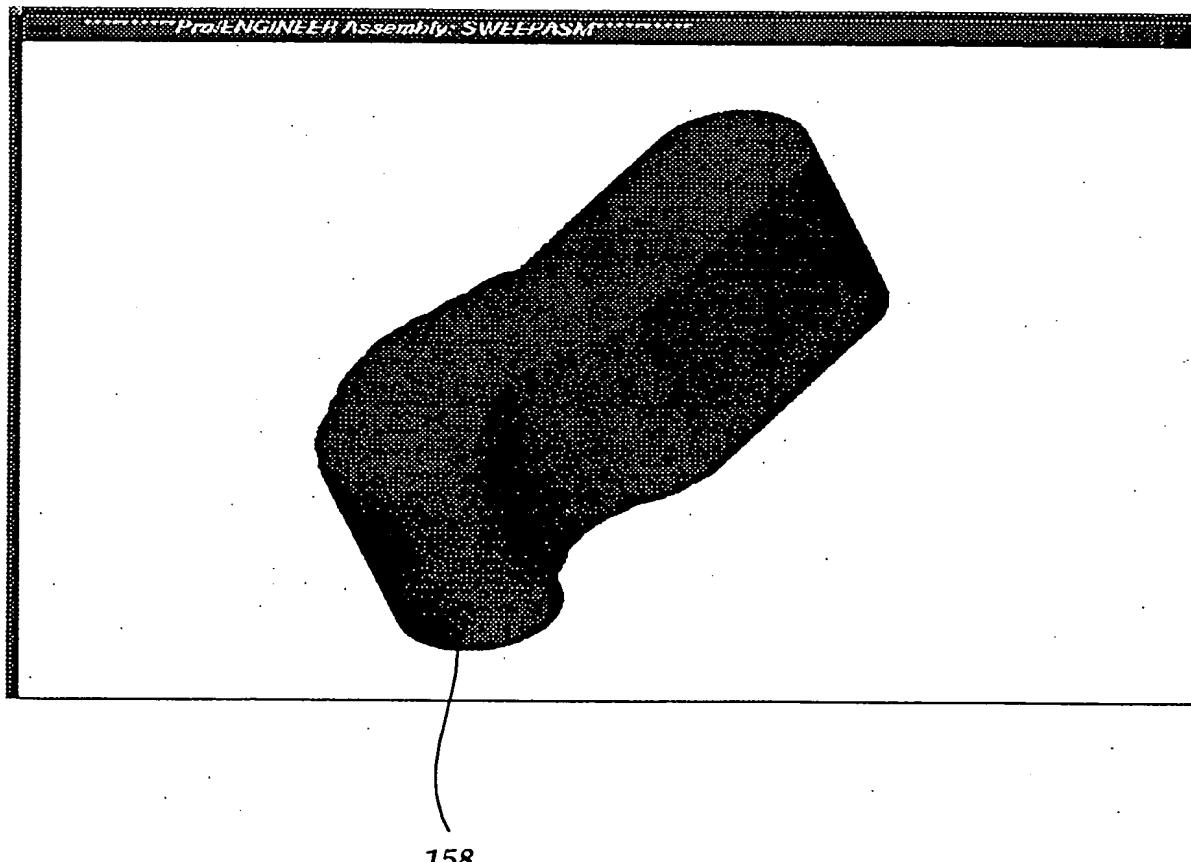


FIG. 5

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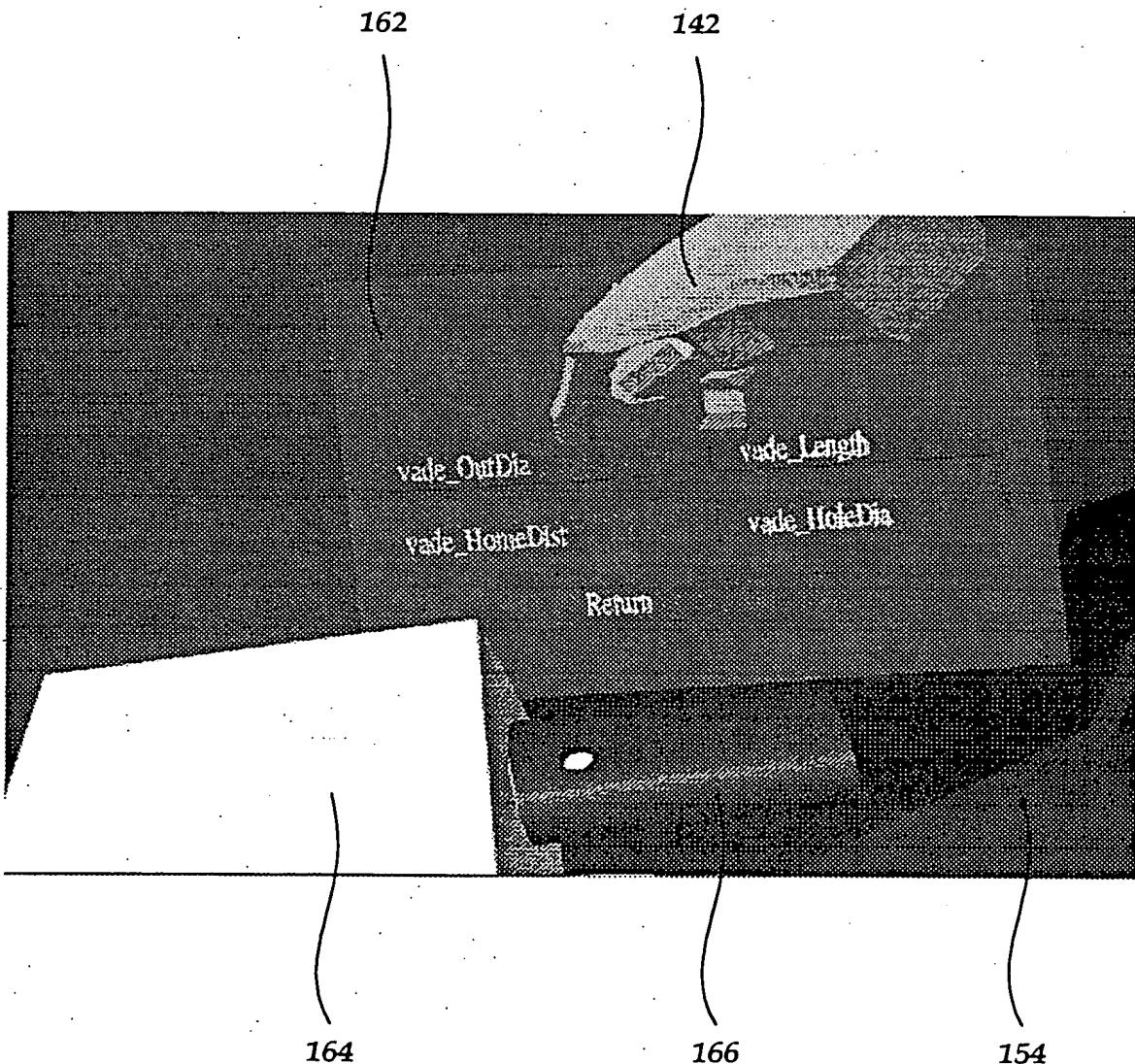


FIG. 6

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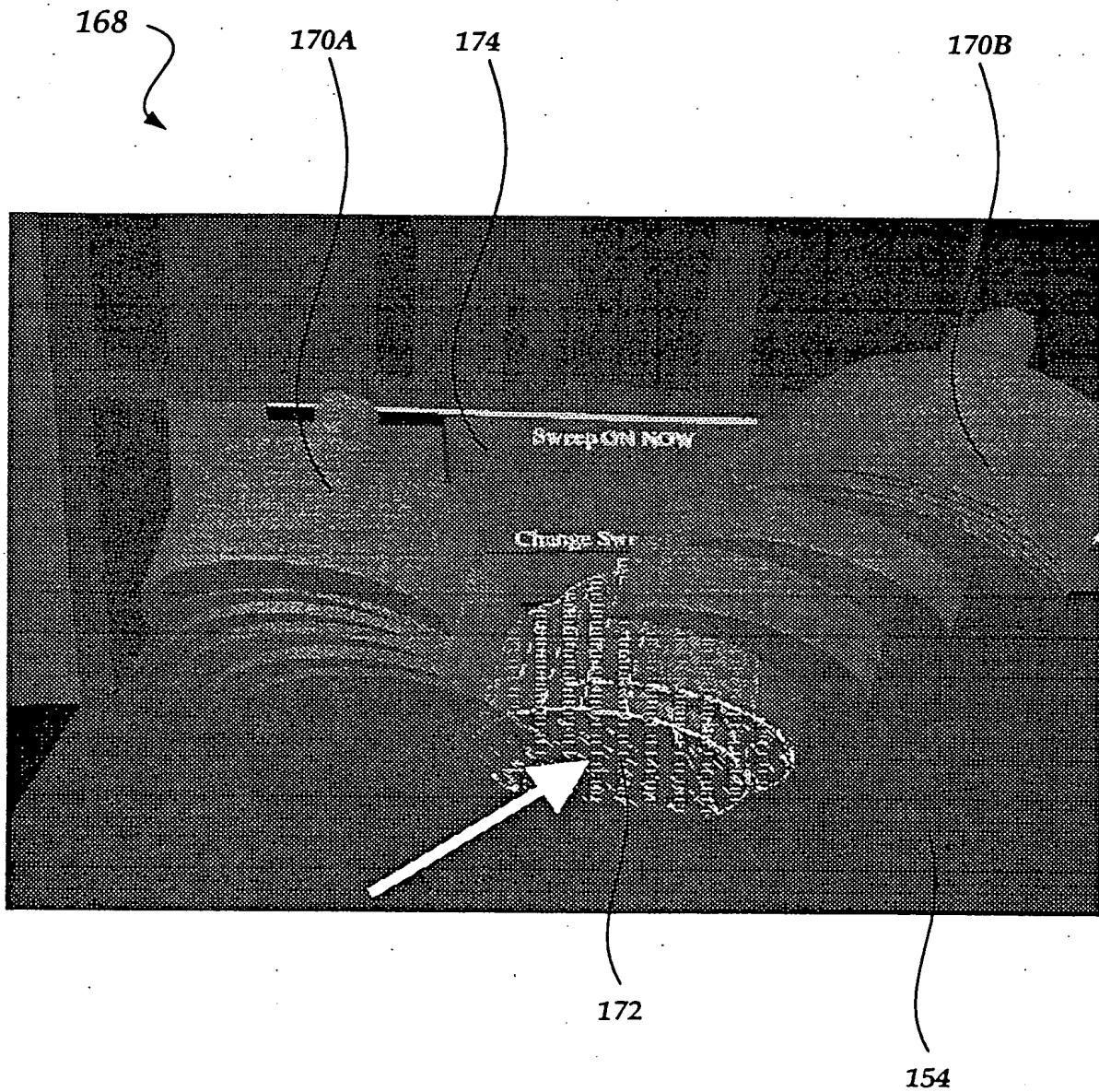


FIG. 7

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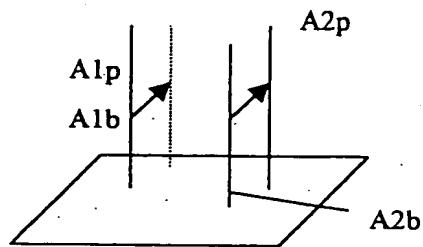


FIG. 8

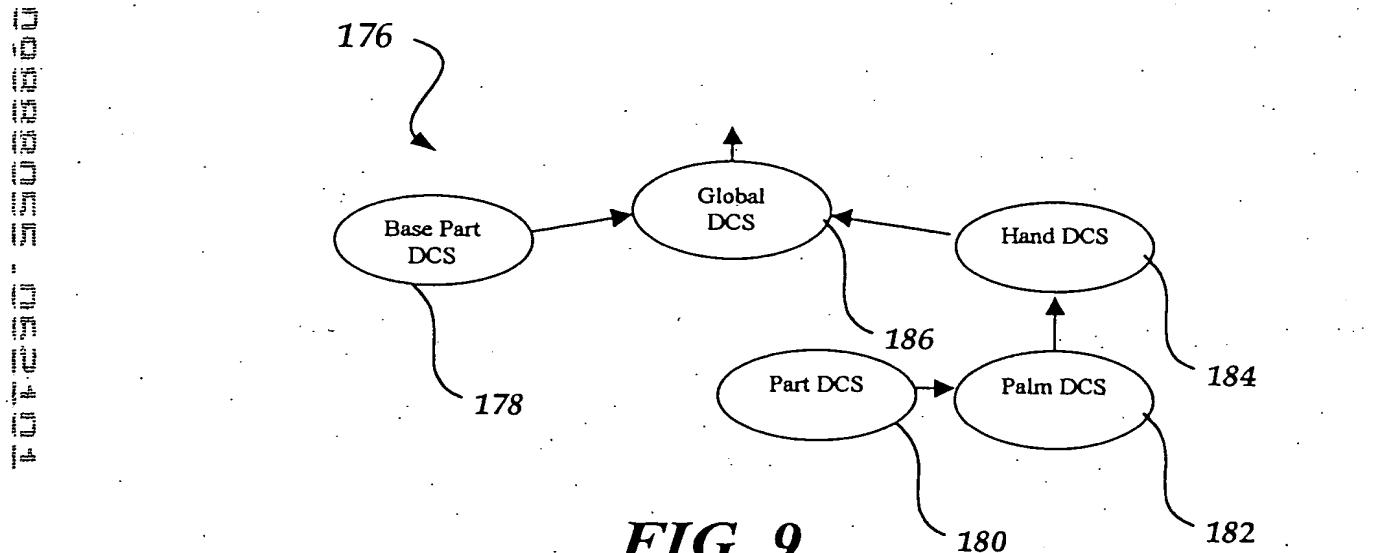
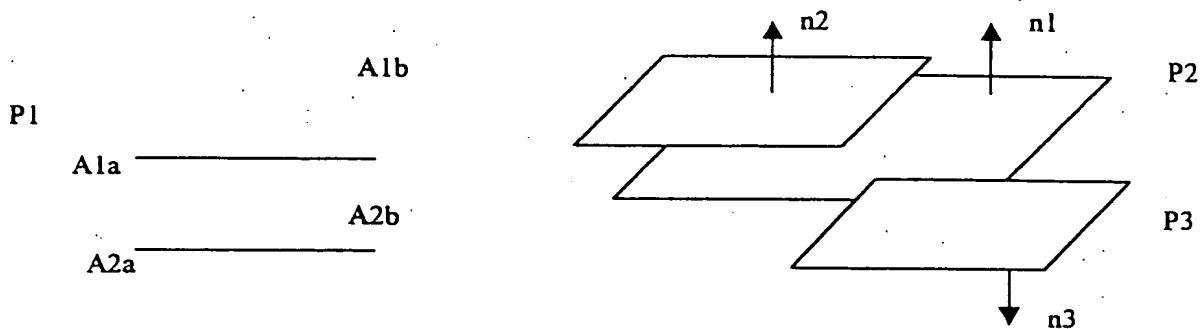


FIG. 9



(a)

(b)

FIG. 10

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Aa ————— Ab

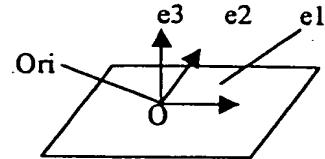


FIG. 11

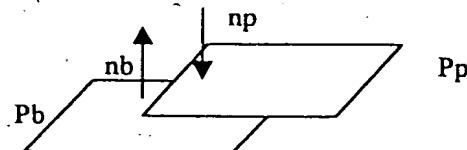


FIG. 12

Combination and order	Conditions
A1, A2	A1 \parallel A2
A1, A2, A3	A1 \parallel A2, A1 \parallel A3
A1, A2, P3	A1 \parallel A2, A1 \parallel P3
A1, P2	A1 \parallel P2, A1 \perp P2
A1, P2, A3	A1 \parallel P2, A1 \parallel A3
A1, P2, P3	A1 \parallel P2, A1 \parallel P3
A1, P2, A3	A1 \perp P2, A3 any case
A1, P2, P3	A1 \perp P2, P2 \parallel P3
P1, A2	P1 \parallel A2, P1 \perp A2
P1, A2, A3	P1 \parallel A2, A2 \parallel A3
P1, A2, P3	P1 \parallel A2, A2 \parallel P3
P1, A2, A3	P1 \perp A2, A3 any case
P1, A2, P3	P1 \perp A1, P1 \parallel P3
P1, P2, A3	P1 \parallel P2, (intersection line of P1, P2) \parallel A3
P1, P2, P3	P1 \parallel P2, P1 \parallel P3, P2 \parallel P3

FIG. 13

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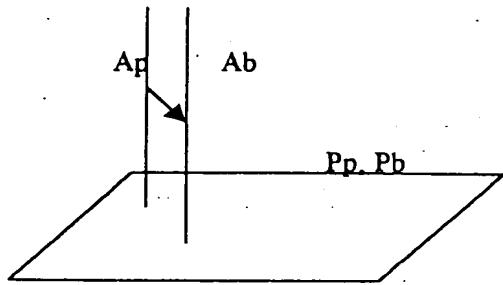


FIG. 14

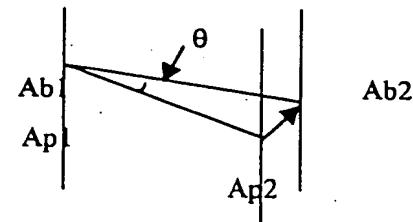


FIG. 15

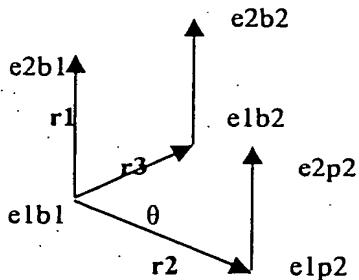


FIG. 16

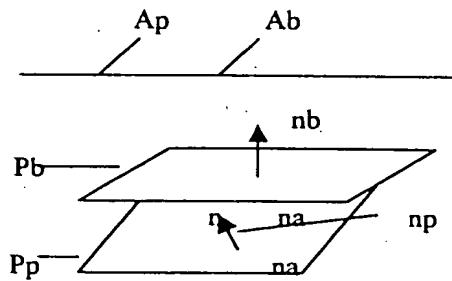


FIG. 17

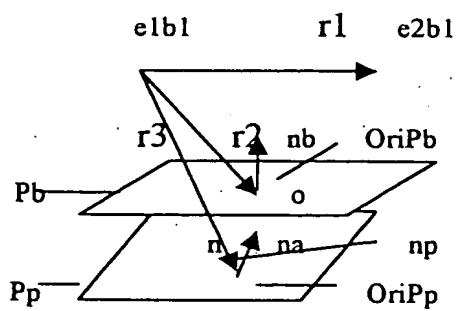


FIG. 18

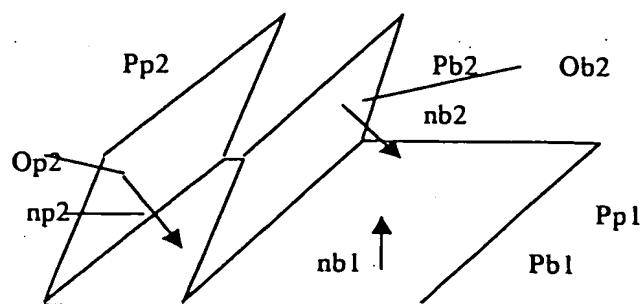


FIG. 19

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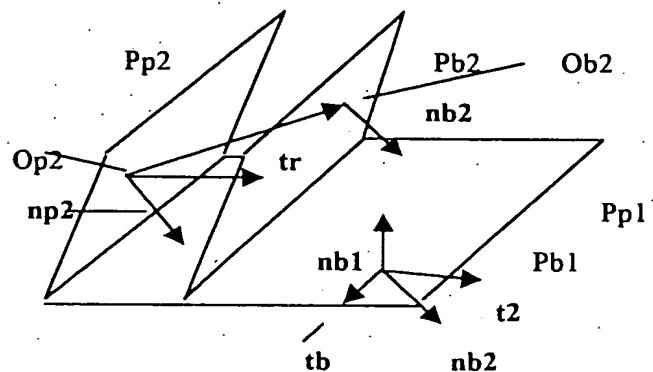


FIG. 20

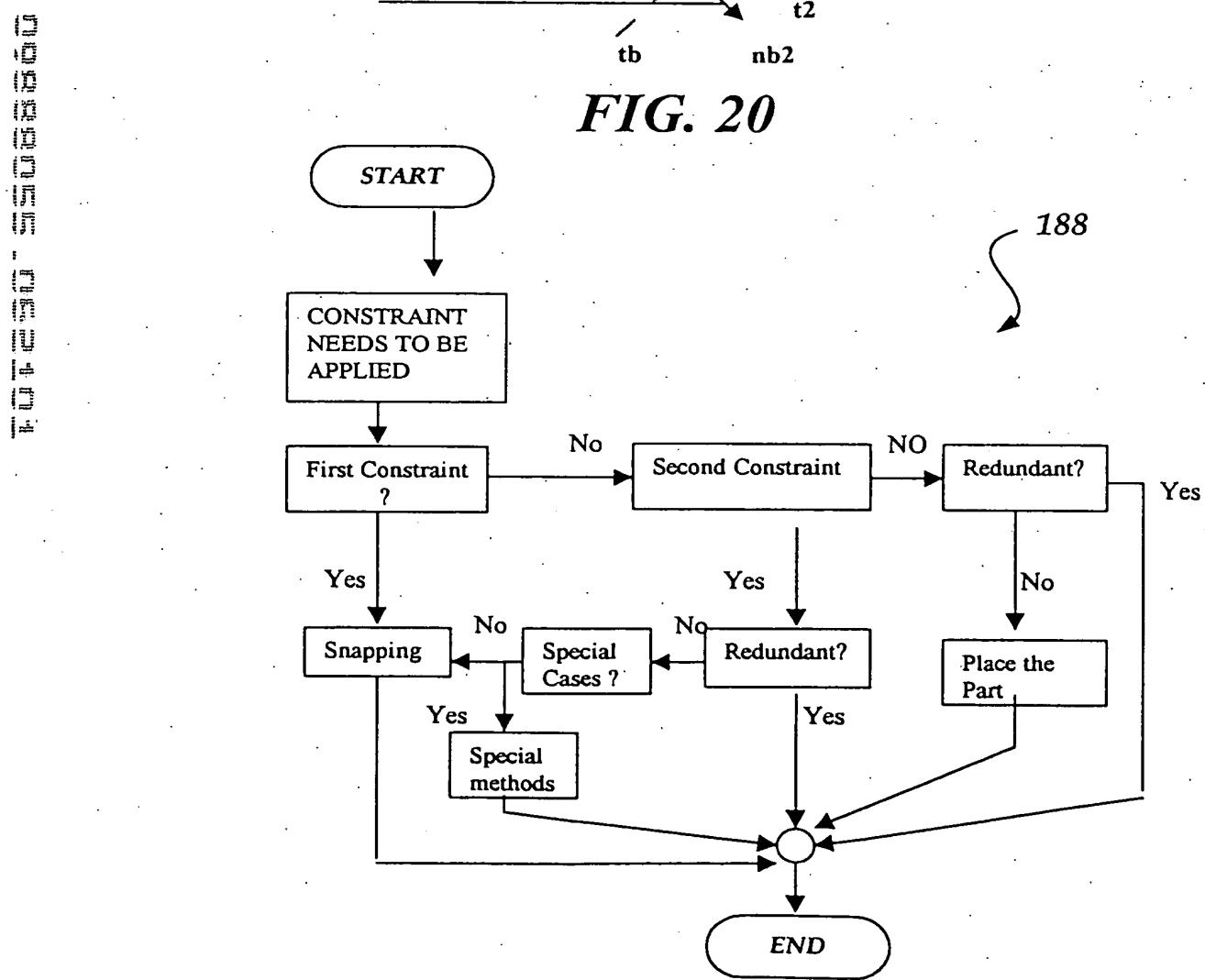


FIG. 21

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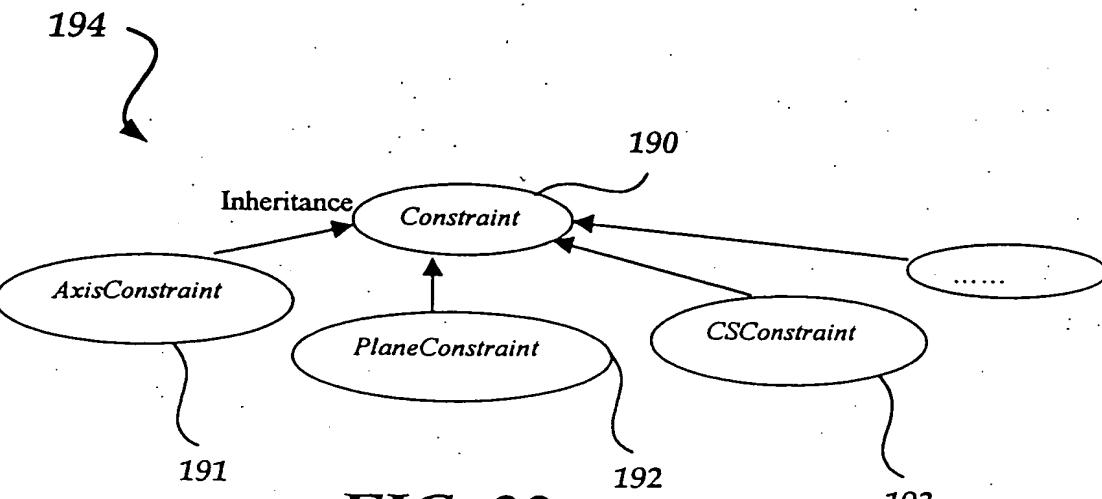


FIG. 22

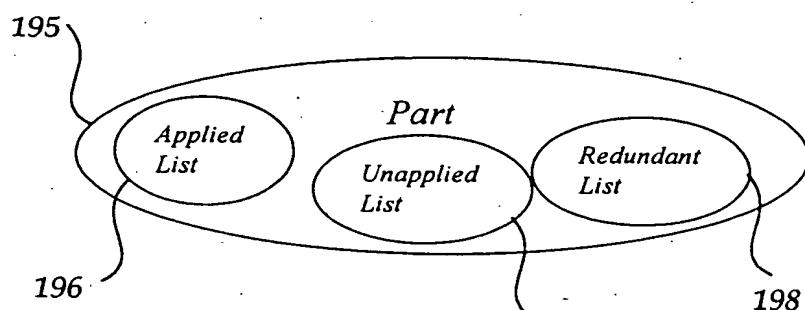


FIG. 23

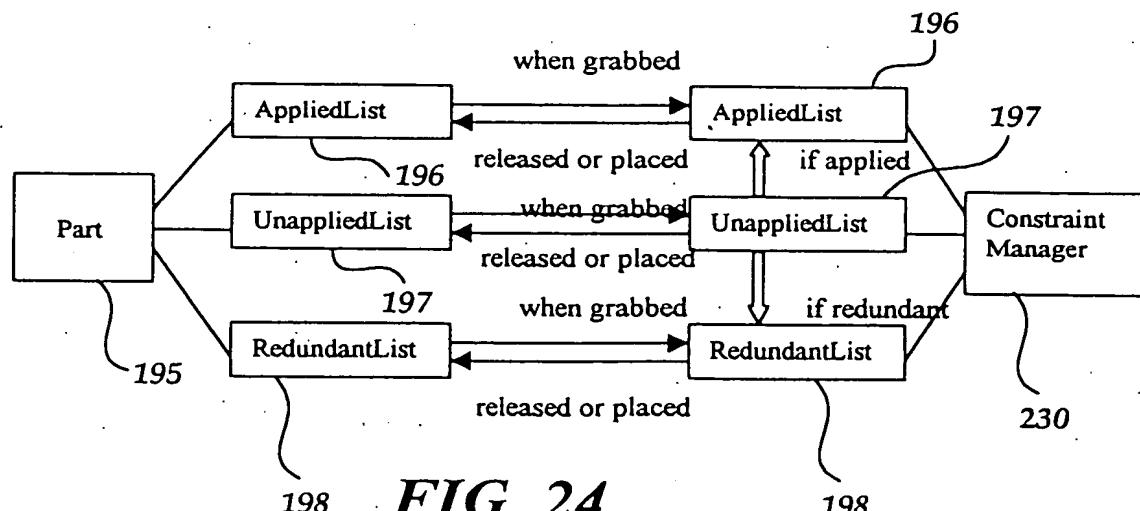


FIG. 24

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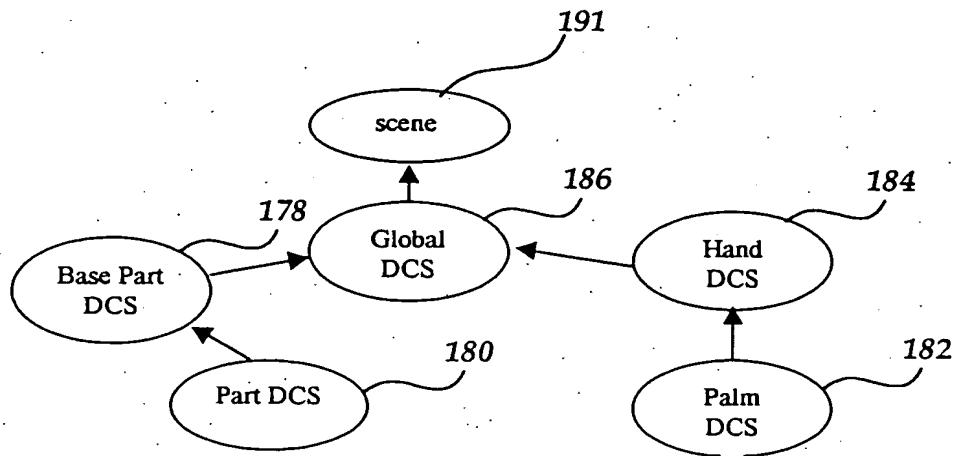


Fig. 25

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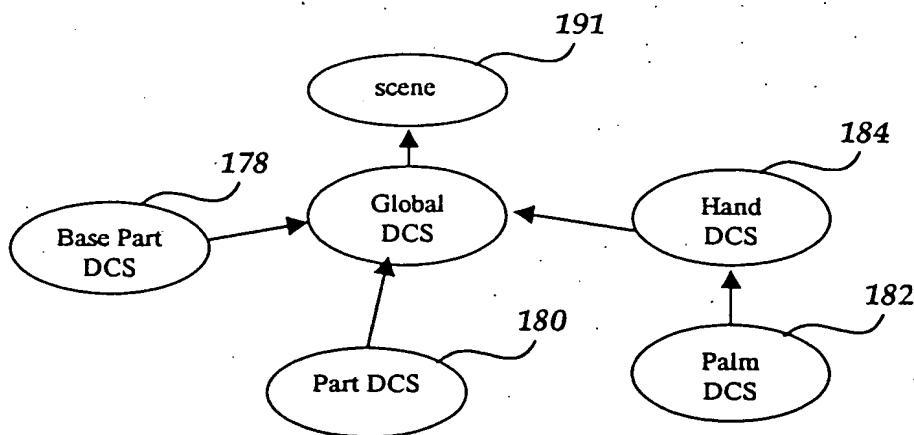


Fig. 26

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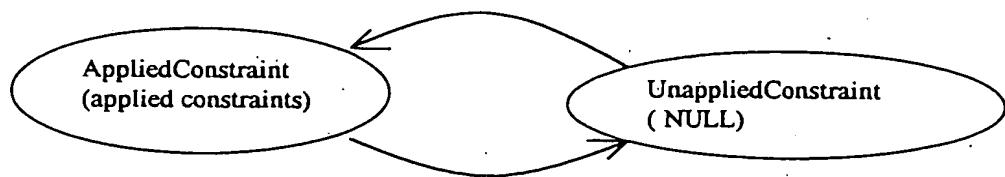
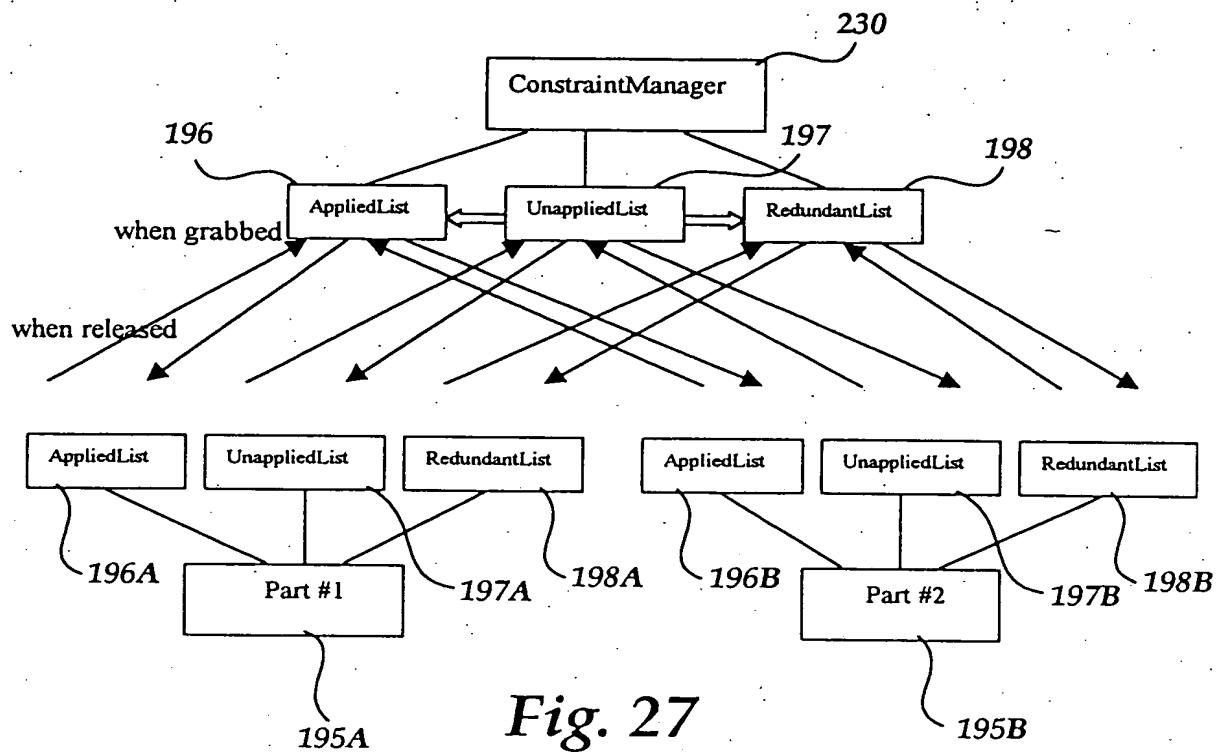


Fig. 28

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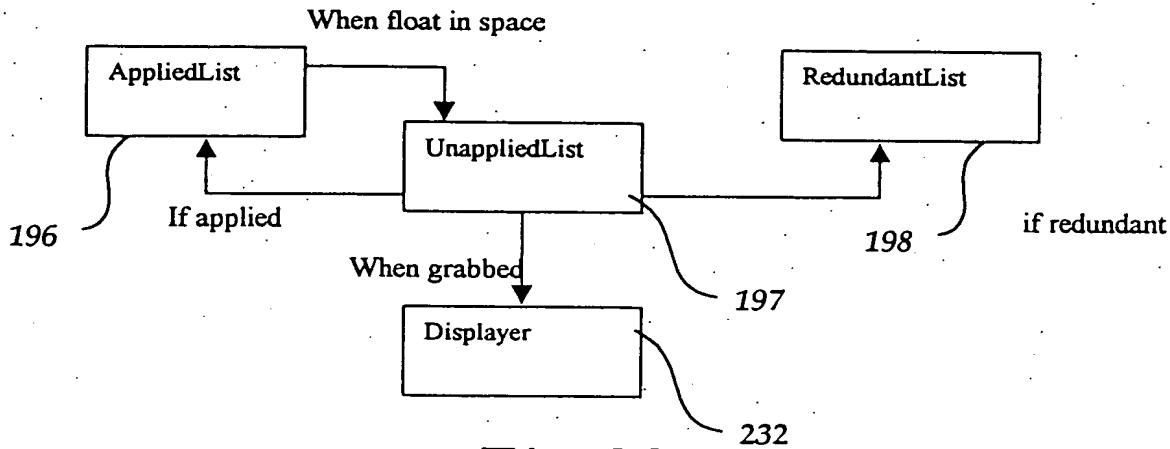


Fig. 29

```

crank property file

LENGTH UNITS: Inch
MASS UNITS: Pound
Surface Finish: 0.001000
Default Linear Tolerances: +- 0.100000  +- 0.010000  +- 0.001000
Default Angular Tolerances: ANG+- 0.500000
Volume: 12.6798973
Surface Area: 69.5717665
Density: 1.0000000
Mass: 12.6798973

CENTER OF GRAVITY wrt DefaultCSC0 coordinate frame: X Y Z
0.0000000 1.1668295 0.5907307

INERTIA wrt DefaultCSC0 coordinate frame:
INERTIA TENSOR:
Ixx Ixy Ixz 69.0504703 -0.0536521 0.0000182
Ixy Iyy Iyz -0.0536521 17.8369050 -3.1957782
Ixz Izy Izz 0.0000182 -3.1957782 68.8163268

INERTIA at CENTER OF GRAVITY wpt (Axis aligned) DefaultCSC0 coordinate
frame:
INERTIA TENSOR:
Ixx Ixy Ixz 47.3620913 -0.0536521 0.0000182
Ixy Iyy Iyz -0.0536521 13.4120927 5.5442472
Ixz Izy Izz 0.0000182 5.5442472 51.5527601

PRINCIPAL MOMENTS OF INERTIA(wrt MC):
I1 I2 I3 12.6224281 47.3621611 52.3423549

ROTATION MATRIX from DefaultCSC0 orientation to PRINCIPAL AXES:
0.0015290 -0.9999977 -0.0015153
0.9900096 0.0013001 0.1409941
-0.1409918 -0.0017157 0.9900093
  
```

Fig. 30

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**Lifting Capacity for infrequent movement and short distances
(pounds)**

	Men	Women
1. Both hands in front Or one hand at side	60	40
2. Both hands 20 inches in front	20	13.3
3. Each hand at side	30	20
3. One hand or each 5 inch out	35	23.3

Fig. 31



Fig. 32

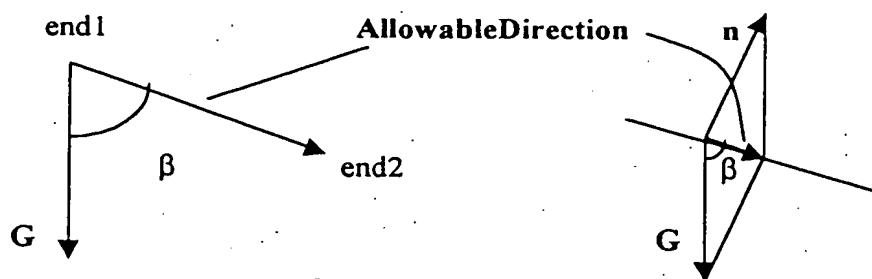


Fig. 33

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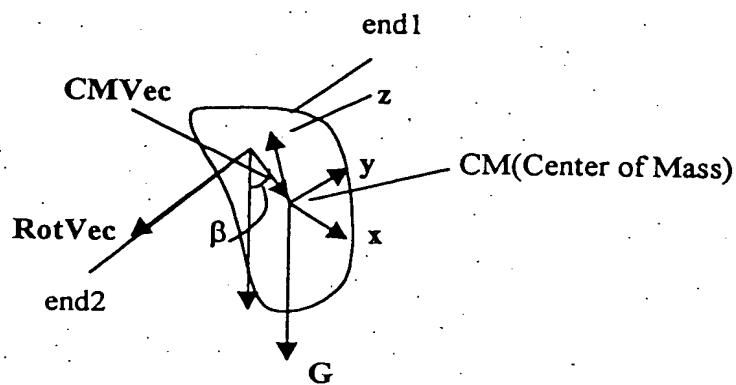


Fig. 34

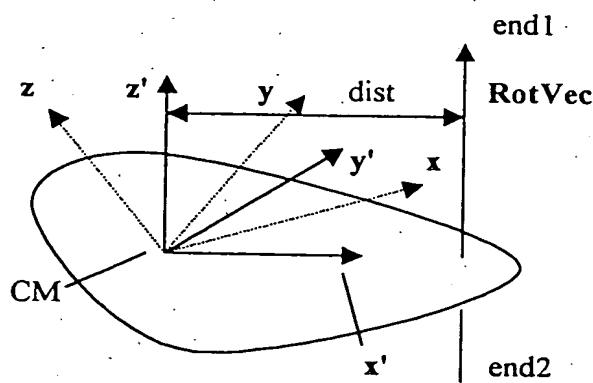


Fig. 35

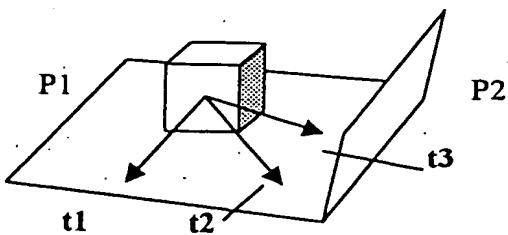


Fig. 36

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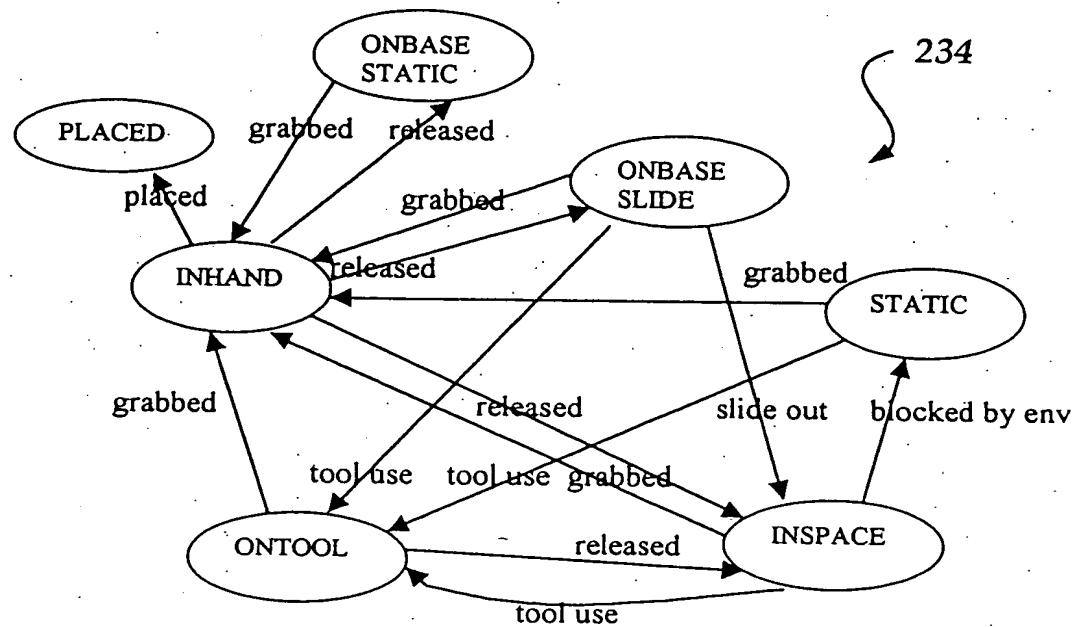


Fig. 37

TOP SECRET - SECURITY INFORMATION

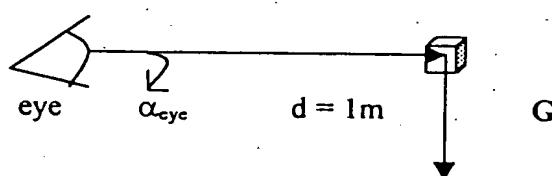


Fig. 38

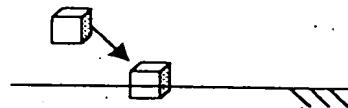


Fig. 39

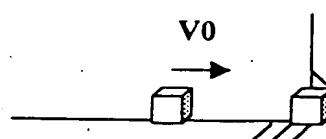


Fig. 40

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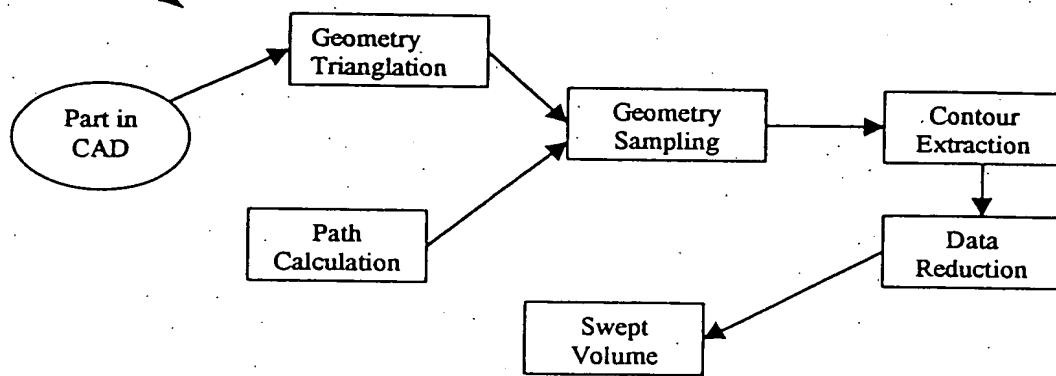


Fig. 41

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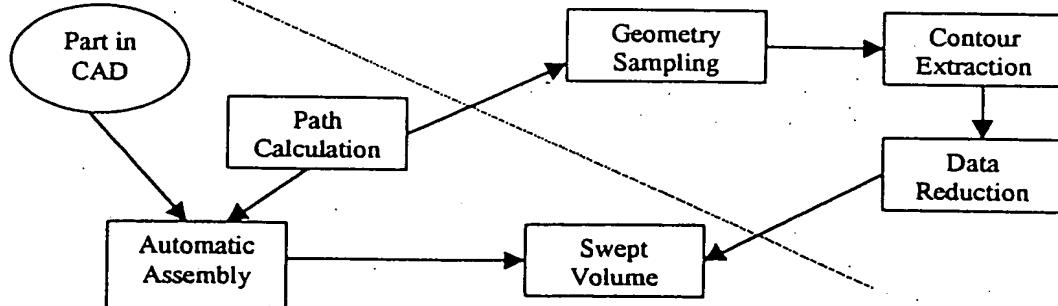


Fig. 42

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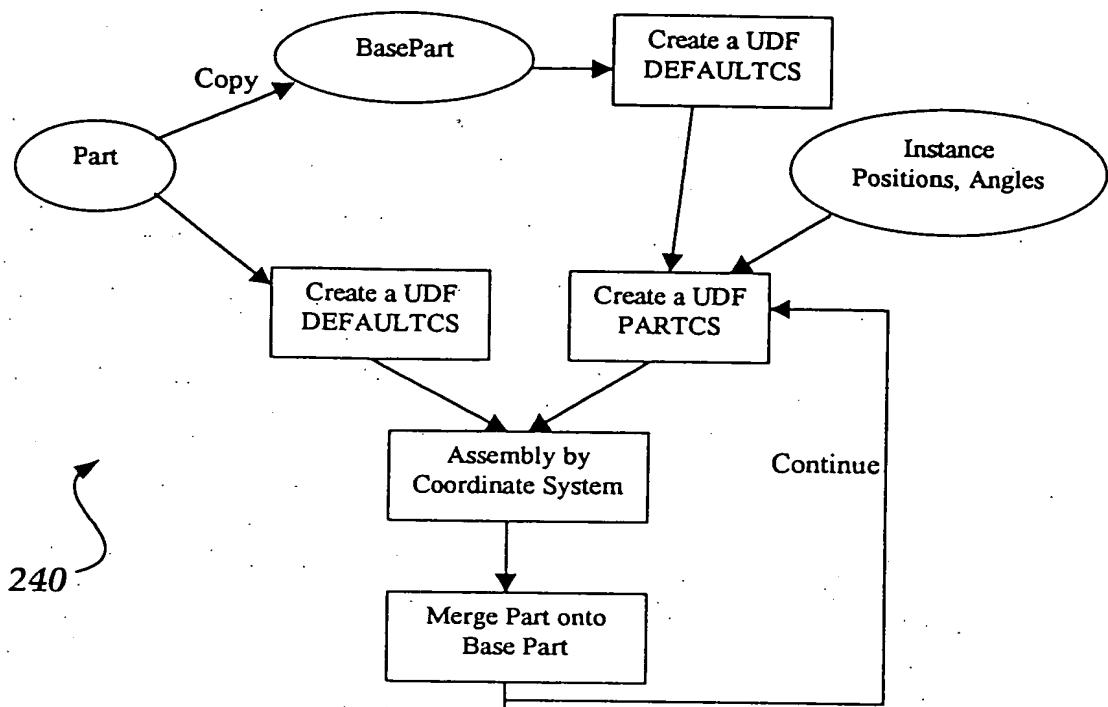


Fig. 43

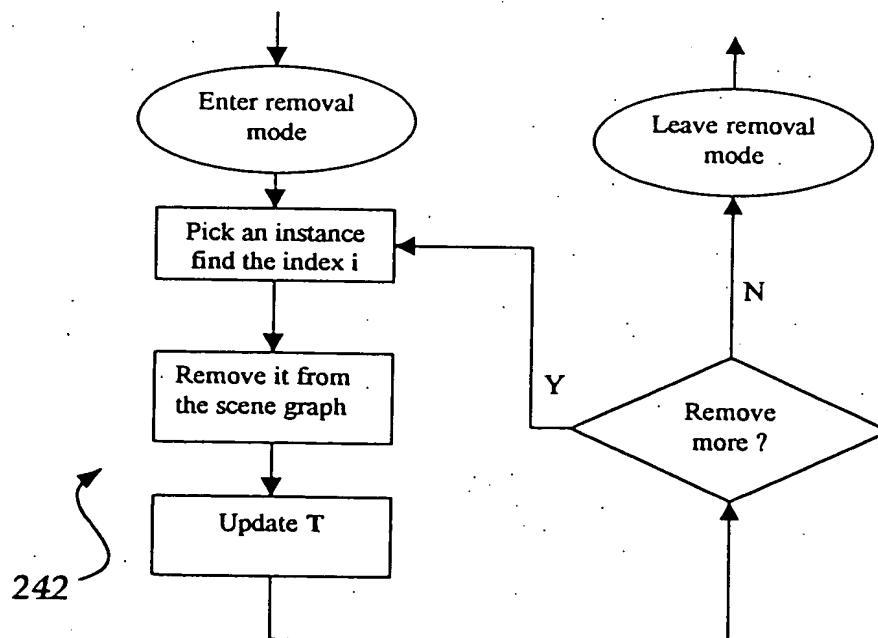
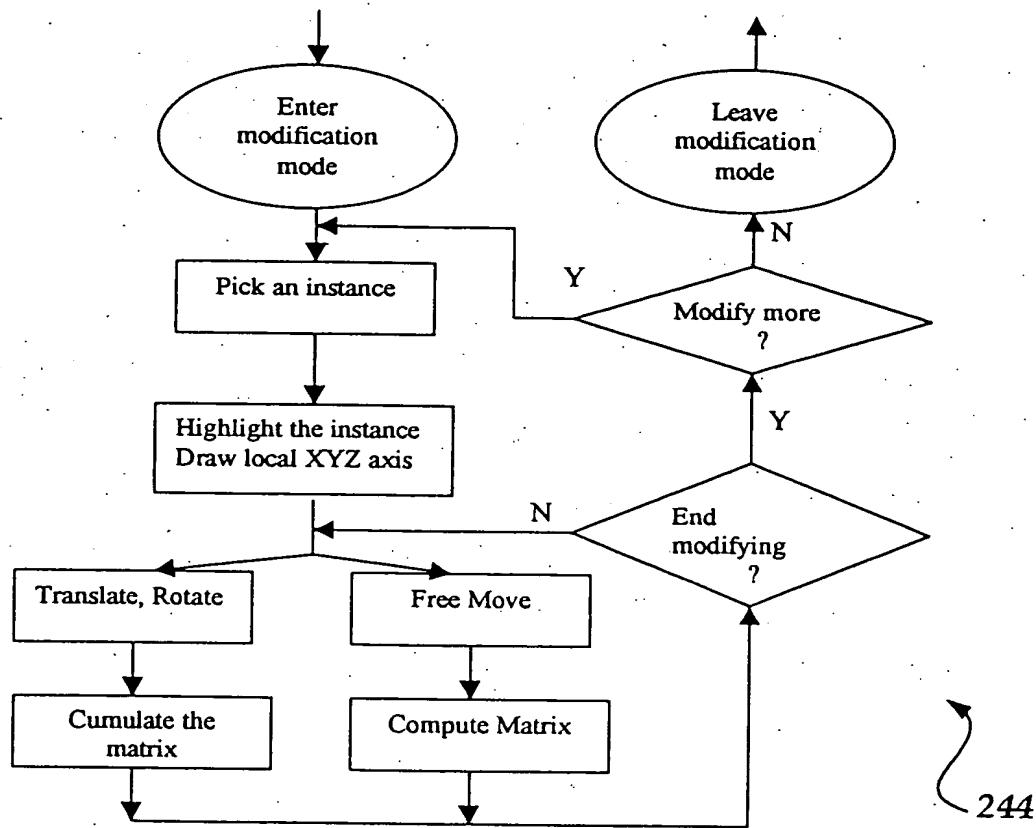


Fig. 44

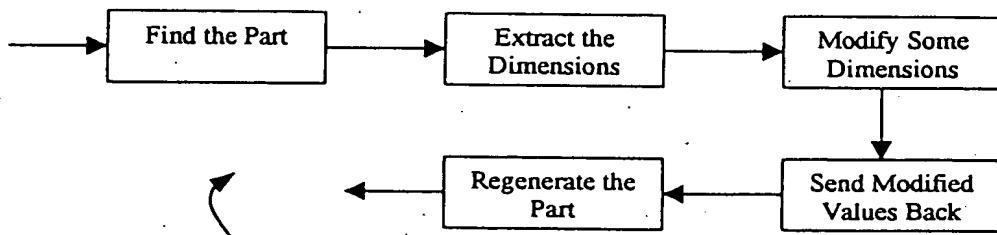
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244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260



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Fig. 45

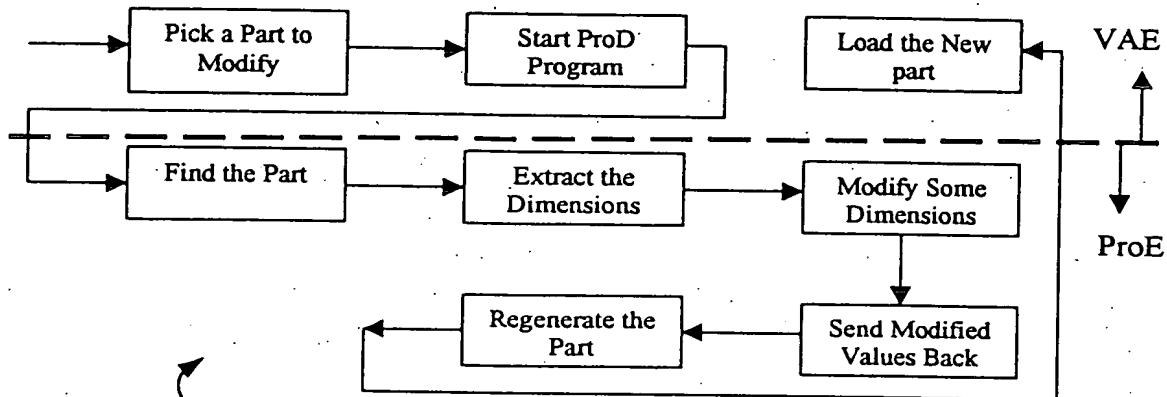


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Fig. 46

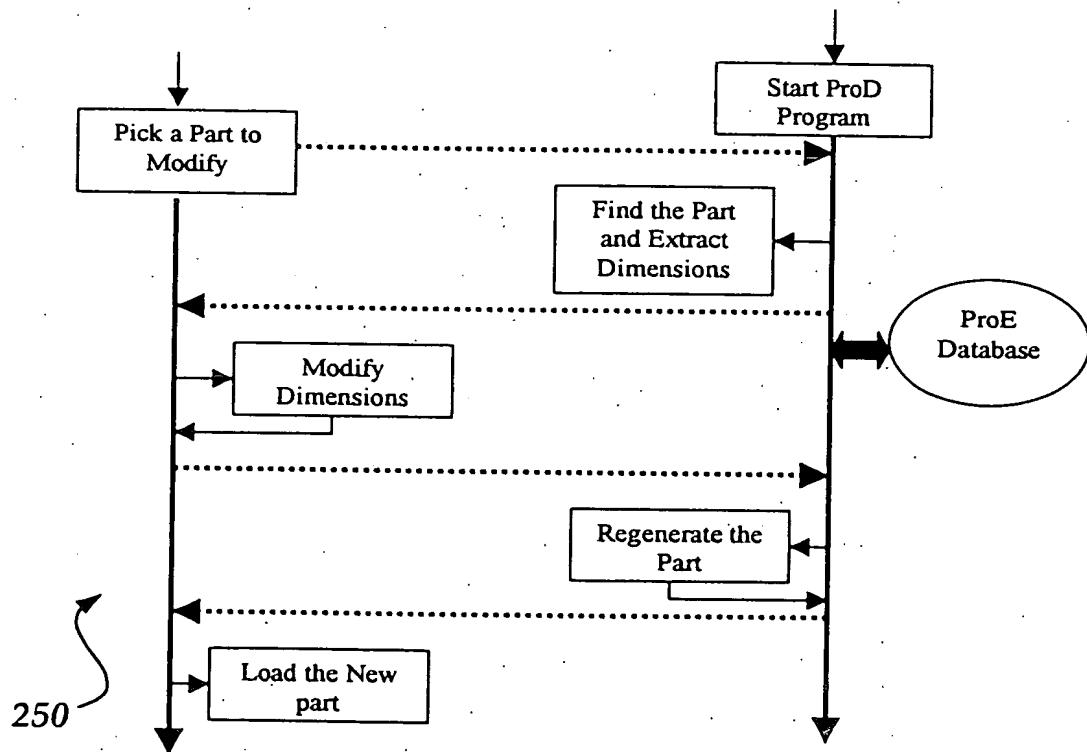
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Fig. 47



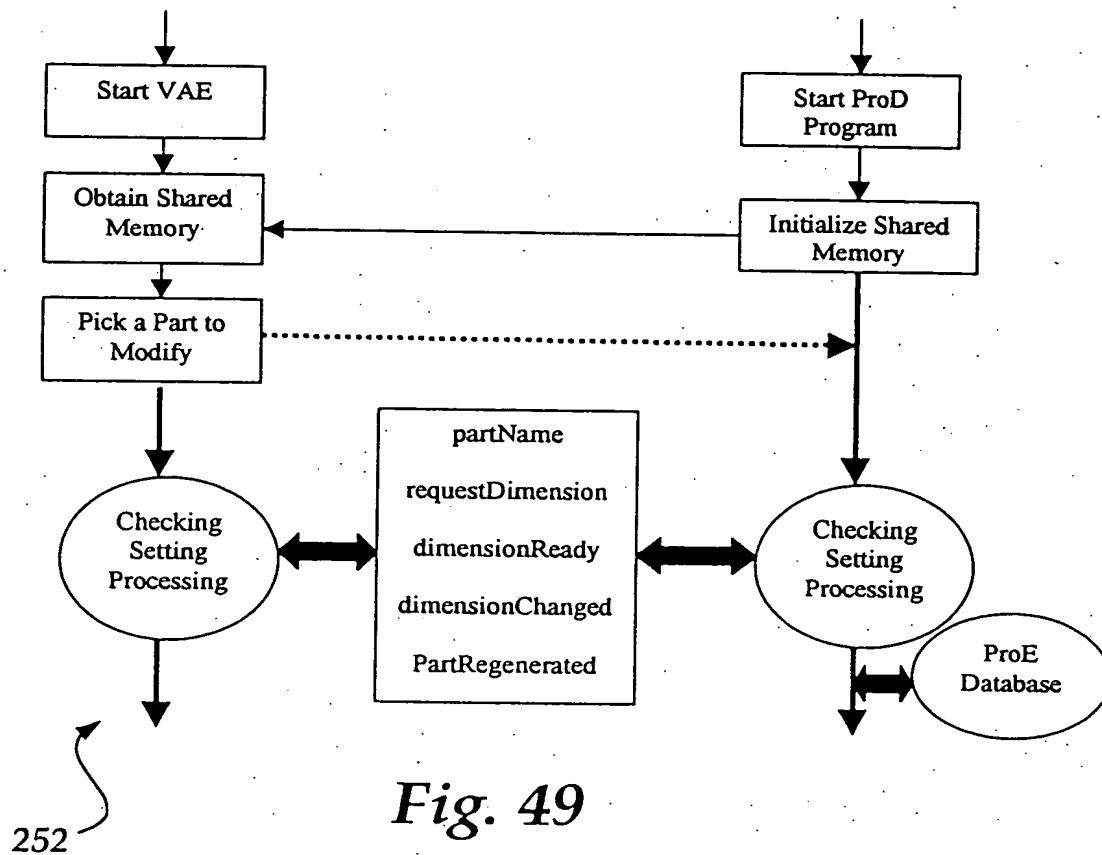
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Fig. 48

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Fig. 49

```

If ( dimensionReady)
{
    display dimensions;
    let user pick dimensions;
    modify the picked dimensions;
    dimensionChanged = ON; /*set the flag */
    dimensionReady = OFF; /*reset the flag */
}
If ( partRegenerated)
{
    load the new part;
    replace the old part;
    partRegenerated = OFF; /*reset the flag */
}
    
```

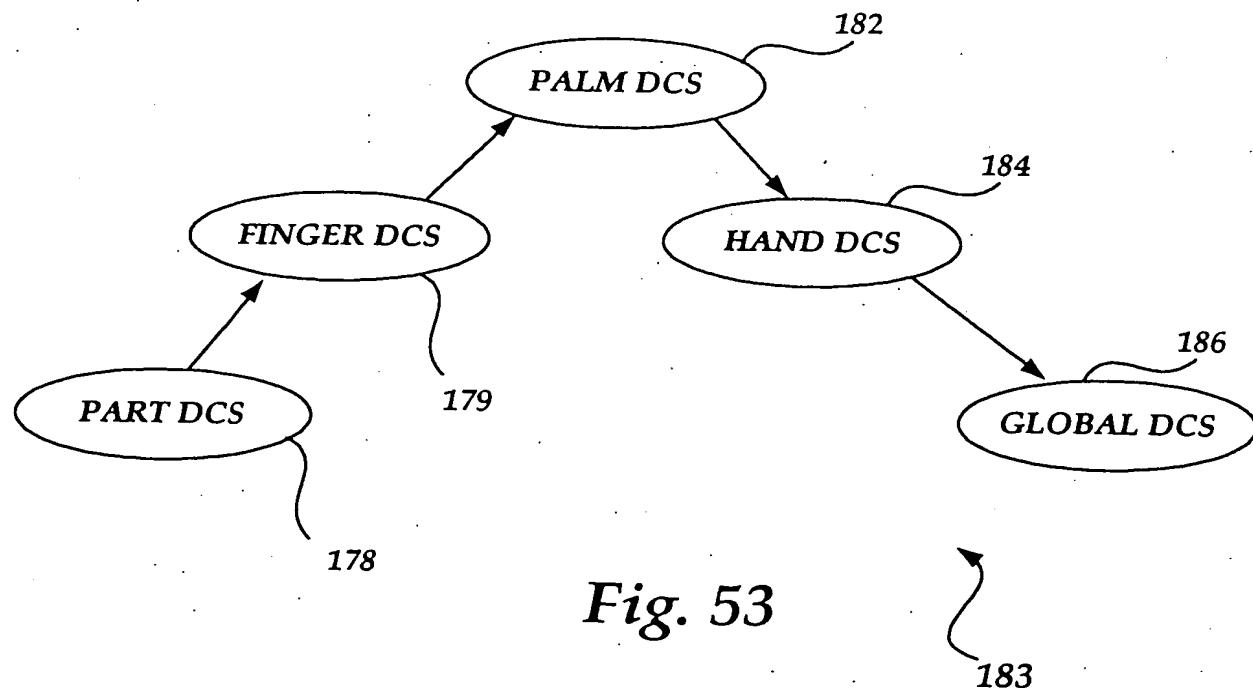
Fig. 50

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```
If ( requestDimensions )
{
  find the part;
  load part into memory;
  extract the dimensions;
  dimensionReady = ON;      /*set the flag */
  requestDimensions = OFF;  /*reset the flag*/
}

If ( dimensionChanged )
{
  get new dimensions;
  set the new dimensions;
  regenerate the part;
  partRegenerated = ON;      /*set the flag */
  dimensionChanged = OFF;    /*reset the flag*/
}
```

Fig. 51



100 200 300 400 500 600 700 800 900 1000

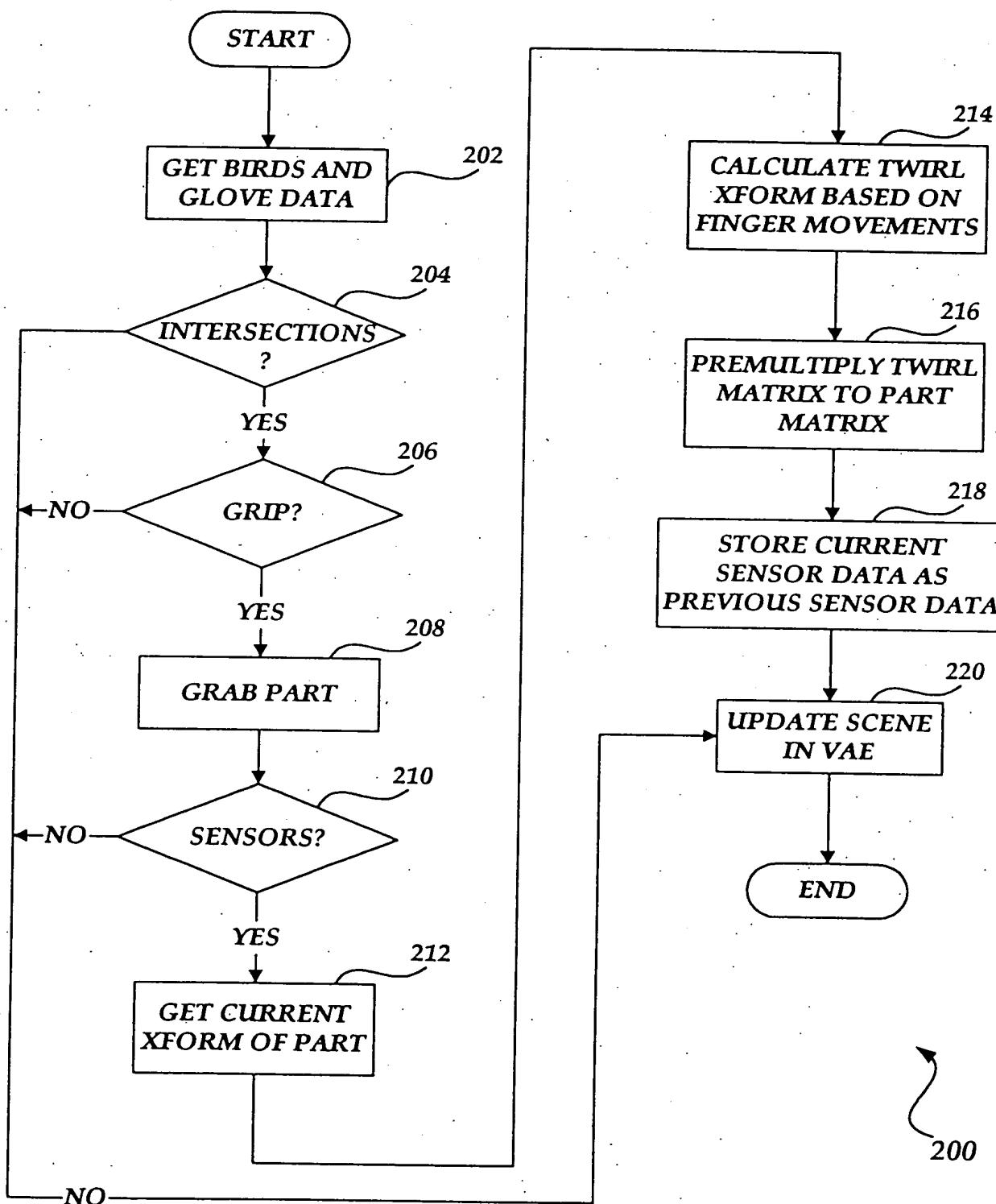


Fig. 52

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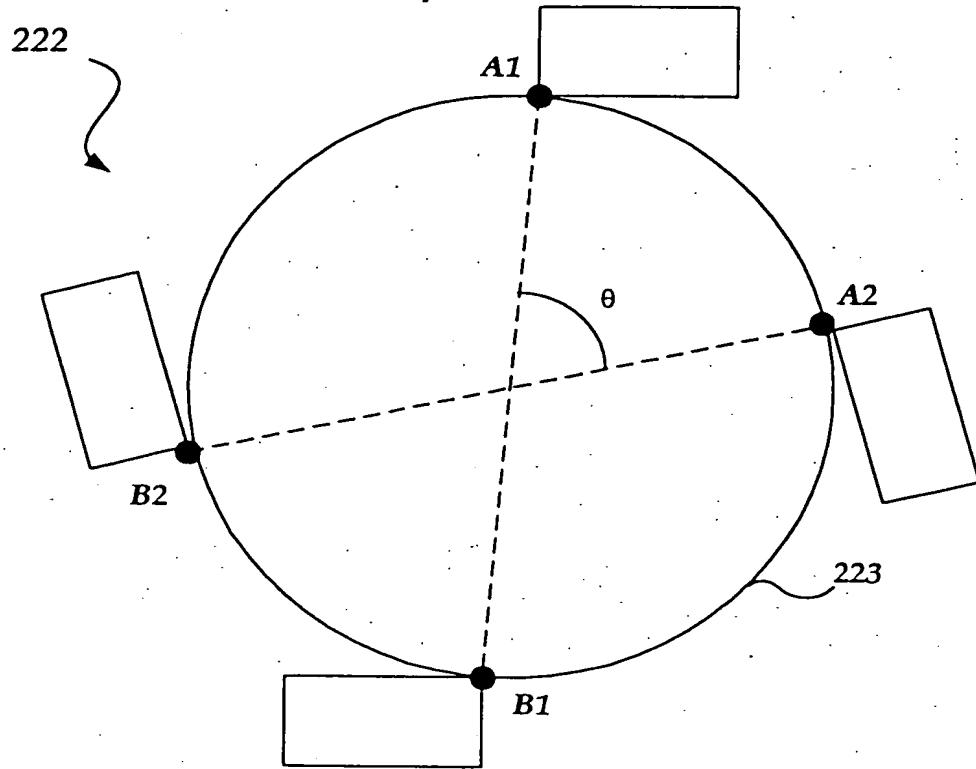


Fig. 54

(Internet / Intranet)

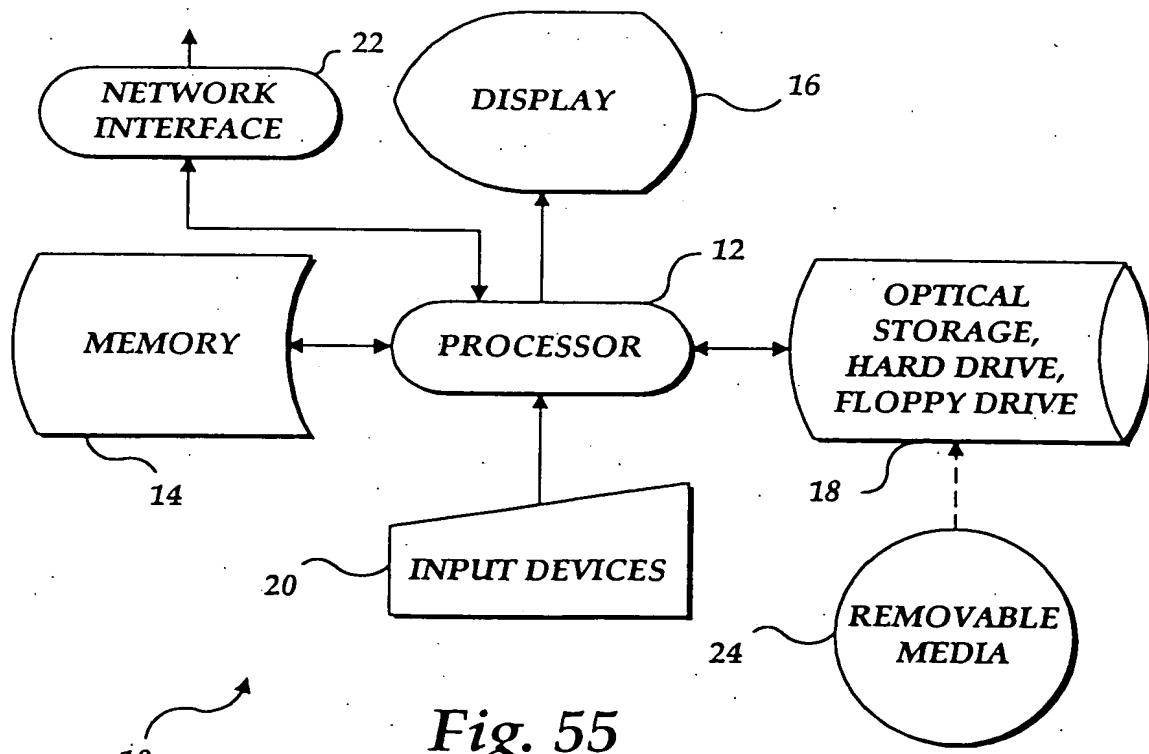


Fig. 55